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tion. The fungus, whose spores start to germinate in alkaline media, was not successfully cultivated in the laboratory. The cross-walls of the multinucleate cells of the vegetative hyphae have a pore, on each side of which are a number of deeply staining granules, whose function was not determined. The archicarp, a scolecite arising as a branch from a vegetative hypha, consists of a basal vegetative portion, a central ascogonial part, and a terminal vegetative region, which is regarded as a functionless trichogyne. The number of cells in each of these regions varies greatly. From the basal region numerous investing hyphae arise. Although the ascogonia grow crowded together, each fruit arises from a separate ascogonium. The cells of the ascogonial portion have each a pore in their transverse walls, which is guarded by small granules early fusing together to form a pad closing the pore. This pad eventually disappears, leaving the multinucleate ascogonial cells in communication. Nuclear fusions are believed to occur in all of the cells of the ascogonial portion. No nuclear migrations were observed, fusions occurring even before the pads disappear. Ascogenous hyphae arise from any or all of the ascogonial cells. Each ascogonial cell is regarded as female, and in the absence of an antheridium the nuclear fusions are held to represent a type of reduced fertilization. The asci develop from the penultimate cells of the recurved tips of the ascogenous hyphae in the usual way. The usual nuclear fusions and divisions occur in the development of the ascus. No karyokinetic figures were observed, and the method of spore-formation is not described.—J. B. OVERTON.

Respiration and fermentation.—KOSTYTSCHEW, in a preliminary paper,¹⁵ points out that “the metabolism of the complex processes of vital oxidation remain yet quite unexplained, chiefly because the oxidases, according to the latest researches, are unable to produce a direct combustion of the carbohydrates.” Conceding that anaerobic respiration is identical with alcoholic fermentation, he enumerates the possibilities as to the rôle of zymase in respiration: (1) the zymase of seed plants is not identical with that of yeast; (2) alcoholic fermentation in seed plants occurs in the presence of O_2 , but has nothing to do with aerobic respiration; (3) alcoholic fermentation is the first stage of aerobic respiration, the alcohol formed being oxidized to CO_2 and H_2O ; (4) alcoholic fermentation is the first stage of aerobic respiration, but in the presence of air under normal conditions no alcohol is formed, because the intermediate products are oxidized; (5) alcoholic fermentation is the first stage of aerobic respiration, but the alcohol is used as constructive material. Of these possibilities he eliminates several, citing various researches which bear on them, and reports his own investigations, which indicate the correctness of the fourth hypothesis above. The small quantities of alcohol that have been observed by some investigators are easily accounted for by the assumption that the oxidative power of the plant does not always keep exact pace

¹⁵ KOSTYTSCHEW, S., Ueber den Zusammenhang der Sauerstoffatmung mit der Alkoholgärung. Ber. Deutsch. Bot. Gesells. 26:565-573. 1908.

with the formation of primary cleavage products, in which case these are elaborated into alcohol and CO_2 .—C. R. B.

A new fossil araucarian.—SINNOTT¹⁶ has described a new genus of araucarian wood from the Cretaceous (?) clays of Scituate, Mass. The structure of *Paracedroxylon scituate* consists of tracheids and pith rays, the radial pits of the former being circular (not flattened by mutual contact), and the cells of the latter thin-walled and without pits except in the walls adjacent to the tracheids. Groups of thin-walled cells which occur in wounded regions are thought possibly to represent abortive resin canals, and in the bands of wound tissue which occur near wounds large anastomosing mucilage spaces appear which are said to represent somewhat modified traumatic resin canals. The conclusion is that *Paracedroxylon* is another primitive araucarian which is "on the border line between this group and their ancestors, the primitive Abietineae," which "probably left the ascending araucarian line before the appearance of flattened pitting," and whose "traumatic canals were subsequently much reduced from the typical abietineous condition."—J. M. C.

Oospheres of Sargassum.—In a short preliminary note, TAHARA¹⁷ announces the periodic liberation of the oospheres of the species of *Sargassum* (about 10 in number) at the Misaki Marine Biological Station of the Tokyo Imperial University, *S. enerve* being the species chiefly under observation. The liberation occurs simultaneously not only in a given individual, but also in all the plants of the locality, proceeding in fortnightly crops on a particular day, at a fixed interval after the highest spring tide, this interval varying in different species. All the oospheres of a single conceptacle are not discharged at one time, but in two or three successive fortnightly crops.—J. M. C.

Light and protein synthesis.—ZALESKI, after further experiments,¹⁸ has supported the general view that light promotes the synthesis of proteins only indirectly, because of the relation to the synthesis of carbohydrates. He rejects the researches of LAURENT and of GODLEWSKI as insufficient to show the direct influence of light upon any molecular combination in the proteins.—C. R. B.

¹⁶ SINNOTT, EDMUND A. W., *Paracedroxylon*, a new type of araucarian wood. *Rhodora* 11:165-173. pls. 80, 81. 1909.

¹⁷ TAHARA, M., On the periodical liberation of the oospheres in *Sargassum*. Preliminary note. *Bot. Mag. Tokyo* 23:151-153. 1909.

¹⁸ ZALESKI, W., Ueber die Rolle des Lichtes bei der Eiweissbildung in den Pflanzen. *Ber. Deutsch. Bot. Gesells.* 27:56-62. 1909.